

# MFG124959 - Vault Extensions Deep Dive

## Explore Vault Extension and Automation Programming

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# Who we are....



- Markus – owns the “Vault Extensions Snorkeling” session, where he has shown how to get started with the Vault API. For this session he provides the real world use cases.
- Christian – owns this “Deep Dive” session and shows the different parts of the Vault API and a bunch of sophisticated API details.



# Class Description

Vault data management software isn't just a single program; it's a framework, composed of many pieces like CAD add-in or Vault Explorer (Client) working together.

Some of these pieces are customizable and some are not.

This class will discuss the different capabilities of the Vault API, in particular, details of Vault Explorer extensions, custom jobs, and custom event handlers—including aspects like debugging, security, and other sophisticated topics.

# Target Audience | Pre-Requisites

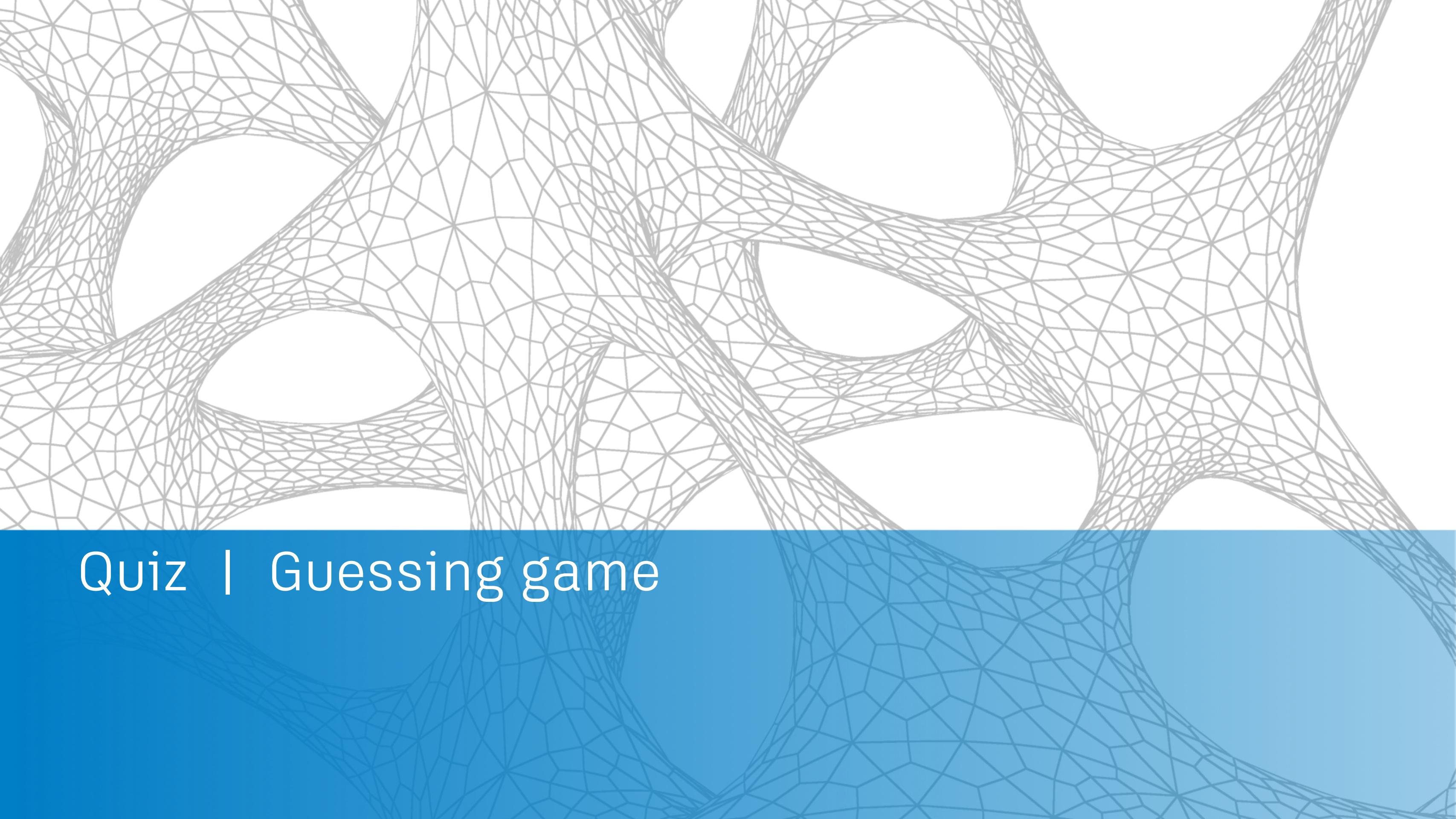
- You should...
  - ...have a basic understanding of the Vault API and its different services
  - ...understand „Custom Objects“
  - ...be able to read and understand C# code (incl. System.Linq)
- You get most out of this class if...
  - ...you already created your own Vault Extensions
- We **don't** expect...
  - ...advanced Vault API knowledge
  - ...any kind of Data Standard knowledge

# Learning Objectives

1. Understand the details of the Vault API, and learn how to create your own functionality and extend existing Vault features
2. Learn how to create and debug own Vault Explorer extensions, jobs, and event handlers
3. Learn how to create your own Vault Explorer extensions, your own jobs, and your own event handlers to automate workflows and repetitive tasks
4. Learn how to use Vault functionalities from within own applications or from within custom Inventor add-ins

# Agenda

- Understand the details  
API Overview + Extensions + Standalone Apps + Licensing
- Use Case 1 – Inventor Document's Internal ID  
Custom Job + Standalone Application + Custom Event Handler
- Use Case 2 – Select a Class from within Inventor  
Inventor Add-In with Vault, Custom Object selection window using VDF grids
- Use Case 3 – Link Properties on file iterations  
Explorer Extension (custom command, custom tab),  
Link Properties (**NEW 2017 API**), VDF grid extension

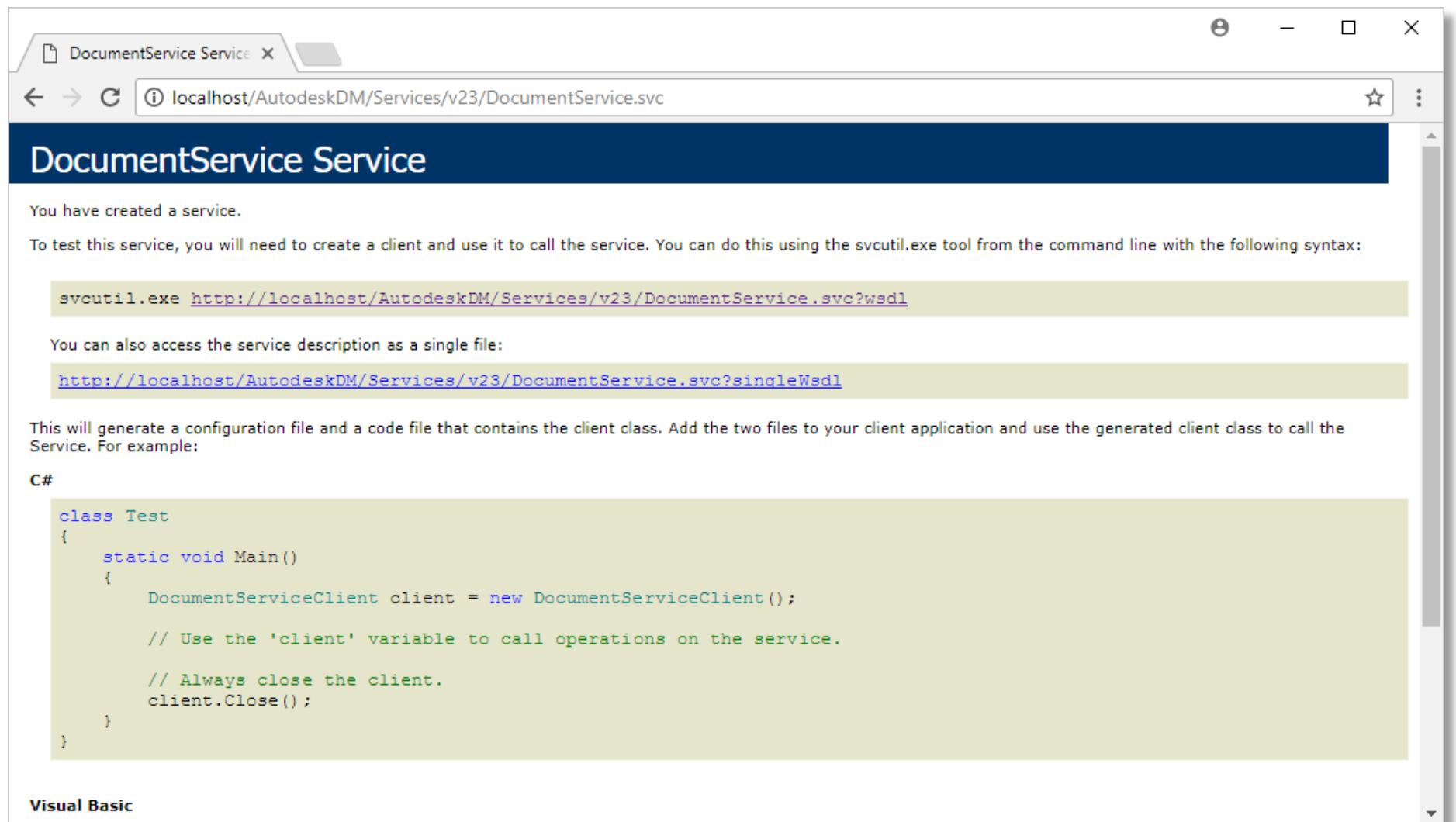


# Quiz | Guessing game

# Quiz

- How many Web Services are available in Vault?

- 5 – 10
- 10 – 20
- 20 – 30



# Quiz

- How many Web Services are available in Vault?

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<http://localhost/AutodeskDM/Services/v23/AdminService.svc>  
<http://localhost/AutodeskDM/Services/Filestore/v23/AuthService.svc>  
<http://localhost/AutodeskDM/Services/v23/BehaviorService.svc>  
<http://localhost/AutodeskDM/Services/v23/CategoryService.svc>  
<http://localhost/AutodeskDM/Services/v23/ChangeOrderService.svc>  
<http://localhost/AutodeskDM/Services/v23/ContentService.svc>  
<http://localhost/AutodeskDM/Services/v23/CustomEntityService.svc>  
<http://localhost/AutodeskDM/Services/v23/DocumentService.svc>  
<http://localhost/AutodeskDM/Services/v23/DocumentServiceExtensions.svc>  
<http://localhost/AutodeskDM/Services/Filestore/v23/FilestoreService.svc>  
<http://localhost/AutodeskDM/Services/Filestore/v23/FilestoreVaultService.svc>  
<http://localhost/AutodeskDM/Services/v23/ForumService.svc>  
<http://localhost/AutodeskDM/Services/Filestore/v23/IdentificationService.svc>  
<http://localhost/AutodeskDM/Services/InformationService.svc>  
<http://localhost/AutodeskDM/Services/v23/ItemService.svc>  
<http://localhost/AutodeskDM/Services/v23/JobService.svc>  
<http://localhost/AutodeskDM/Services/v23/KnowledgeLibraryService.svc>  
<http://localhost/AutodeskDM/Services/v23/KnowledgeVaultService.svc>  
<http://localhost/AutodeskDM/Services/v23/LifeCycleService.svc>  
<http://localhost/AutodeskDM/Services/v23/PackageService.svc>  
<http://localhost/AutodeskDM/Services/v23/PropertyService.svc>  
<http://localhost/AutodeskDM/Services/v23/ReplicationService.svc>  
<http://localhost/AutodeskDM/Services/v23/RevisionService.svc>  
<http://localhost/AutodeskDM/Services/v23/SecurityService.svc>  
<http://localhost/AutodeskDM/Services/v23/SharePointService.svc>  
<http://localhost/AutodeskDM/Services/Filestore/v23/WinAuth/WinAuthService.svc>

# Quiz

- How many Service Methods are provided by these Web Services?

- 75 – 100
- 100 – 500
- 500 – 750

Vault SDK	
<b>JobService Class Methods</b>	
<a href="#">See Also</a> <a href="#">Send Feedback</a>	
<a href="#">Autodesk.Connectivity.WebServices Namespace</a> : JobService Class	
For a list of all members of this type, see <a href="#">JobService members</a> .	
<b>□ Public Methods</b>	
Name	Description
<a href="#">AddJob</a>	Adds a new job to the queue.
<a href="#">CheckRolePermissions</a>	Check if the current logged in user has permission to execute specific web service APIs
<a href="#">DeleteJobById</a>	Deletes a job from the queue.
<a href="#">EnableChangeObservation</a>	Reserved for future use.
<a href="#">GetJobQueueEnabled</a>	Tells if the job queue is enabled.
<a href="#">GetJobsByDate</a>	Get all jobs from the queue queued on or after the specified start date.
<a href="#">ReserveNextJob</a>	Reserve the next job in the queue
<a href="#">SetJobQueueEnabled</a>	Enables or disables the job queue.
<a href="#">UnReserveJobById</a>	Removes a reservation on a job.
<a href="#">UnReserveJobsByClientName</a>	Un-reserve all jobs for a given client.
<a href="#">UpdateJobFailure</a>	Inform the job queue that the client was unable to complete the job.
<a href="#">UpdateJobSuccess</a>	Inform the job queue that the job was successfully completed.

# Quiz

- How many Service Methods are provided by these Web Services?

<a href="http://localhost/AutodeskDM/Services/v23/AdminService.svc">http://localhost/AutodeskDM/Services/v23/AdminService.svc</a>	44
<a href="http://localhost/AutodeskDM/Services/Filestore/v23/AuthService.svc">http://localhost/AutodeskDM/Services/Filestore/v23/AuthService.svc</a>	5
<a href="http://localhost/AutodeskDM/Services/v23/BehaviorService.svc">http://localhost/AutodeskDM/Services/v23/BehaviorService.svc</a>	3
<a href="http://localhost/AutodeskDM/Services/v23/CategoryService.svc">http://localhost/AutodeskDM/Services/v23/CategoryService.svc</a>	18
<a href="http://localhost/AutodeskDM/Services/v23/ChangeOrderService.svc">http://localhost/AutodeskDM/Services/v23/ChangeOrderService.svc</a>	71
<a href="http://localhost/AutodeskDM/Services/v23/ContentService.svc">http://localhost/AutodeskDM/Services/v23/ContentService.svc</a>	58
<a href="http://localhost/AutodeskDM/Services/v23/CustomEntityService.svc">http://localhost/AutodeskDM/Services/v23/CustomEntityService.svc</a>	19
<a href="http://localhost/AutodeskDM/Services/v23/DocumentService.svc">http://localhost/AutodeskDM/Services/v23/DocumentService.svc</a>	165
<a href="http://localhost/AutodeskDM/Services/v23/DocumentServiceExtensions.svc">http://localhost/AutodeskDM/Services/v23/DocumentServiceExtensions.svc</a>	22
<a href="http://localhost/AutodeskDM/Services/Filestore/v23/FilestoreService.svc">http://localhost/AutodeskDM/Services/Filestore/v23/FilestoreService.svc</a>	10
<a href="http://localhost/AutodeskDM/Services/Filestore/v23/FilestoreVaultService.svc">http://localhost/AutodeskDM/Services/Filestore/v23/FilestoreVaultService.svc</a>	5
<a href="http://localhost/AutodeskDM/Services/v23/ForumService.svc">http://localhost/AutodeskDM/Services/v23/ForumService.svc</a>	3
<a href="http://localhost/AutodeskDM/Services/Filestore/v23/IdentificationService.svc">http://localhost/AutodeskDM/Services/Filestore/v23/IdentificationService.svc</a>	1
<a href="http://localhost/AutodeskDM/Services/InformationService.svc">http://localhost/AutodeskDM/Services/InformationService.svc</a>	5
<a href="http://localhost/AutodeskDM/Services/v23/ItemService.svc">http://localhost/AutodeskDM/Services/v23/ItemService.svc</a>	95
<a href="http://localhost/AutodeskDM/Services/v23/JobService.svc">http://localhost/AutodeskDM/Services/v23/JobService.svc</a>	12
<a href="http://localhost/AutodeskDM/Services/v23/KnowledgeLibraryService.svc">http://localhost/AutodeskDM/Services/v23/KnowledgeLibraryService.svc</a>	13
<a href="http://localhost/AutodeskDM/Services/v23/KnowledgeVaultService.svc">http://localhost/AutodeskDM/Services/v23/KnowledgeVaultService.svc</a>	15
<a href="http://localhost/AutodeskDM/Services/v23/LifeCycleService.svc">http://localhost/AutodeskDM/Services/v23/LifeCycleService.svc</a>	22
<a href="http://localhost/AutodeskDM/Services/v23/PackageService.svc">http://localhost/AutodeskDM/Services/v23/PackageService.svc</a>	13
<a href="http://localhost/AutodeskDM/Services/v23/PropertyService.svc">http://localhost/AutodeskDM/Services/v23/PropertyService.svc</a>	30
<a href="http://localhost/AutodeskDM/Services/v23/ReplicationService.svc">http://localhost/AutodeskDM/Services/v23/ReplicationService.svc</a>	12
<a href="http://localhost/AutodeskDM/Services/v23/RevisionService.svc">http://localhost/AutodeskDM/Services/v23/RevisionService.svc</a>	13
<a href="http://localhost/AutodeskDM/Services/v23/SecurityService.svc">http://localhost/AutodeskDM/Services/v23/SecurityService.svc</a>	7
<a href="http://localhost/AutodeskDM/Services/v23/SharePointService.svc">http://localhost/AutodeskDM/Services/v23/SharePointService.svc</a>	3
<a href="http://localhost/AutodeskDM/Services/Filestore/v23/WinAuth/WinAuthService.svc">http://localhost/AutodeskDM/Services/Filestore/v23/WinAuth/WinAuthService.svc</a>	4

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# Quiz

- How many Classes are available in the Vault API?  
(Limited to Autodesk.Connectivity.WebServices assembly)

- 100 – 200
- 200 – 300
- 300 – 400

```
var srchCondInternalId = new SrchCond  
{  
    PropDefId = propDefInternalId.Id,  
    PropTyp = PropertySearchType.SingleProperty,  
    SrchOper = 4, // Is empty  
    SrchRule = SearchRuleType.Must  
};
```

# Quiz

- How many Classes are available in the Vault API?

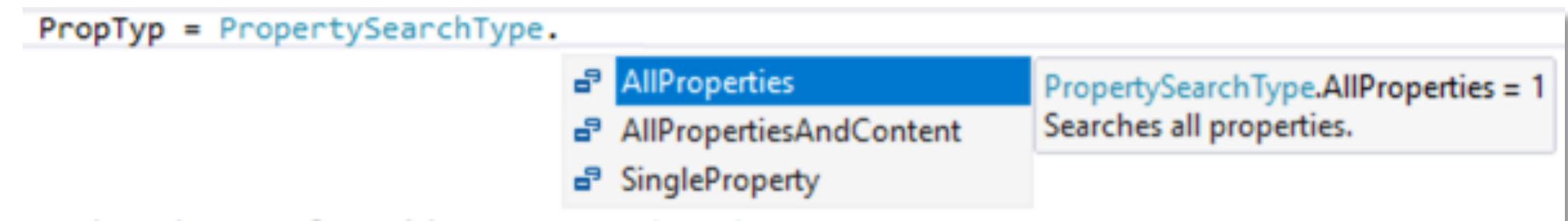
AccessPermis	ChangeOrderItem	Facet	FolderDelRestricArray	NameValuePair	RoutingUserRoles
ACE	ChangeOrderLite	FacetSet	FreeTxtField	NumSchm	RuleSet
ACL	ChangeOrderNumSchm	FacetSetFilter	GetPromoteOrderResults	NumSchmField	SecurityHeader
Activity	ChangeOrderParticipant	Facility	Group	Permis	ServerCfg
ActivityHist	CheckinFileCommandEventArgs	File	GroupInfo	PkgAttmt	ServerIdentities
AddChangeOrderCommandEventArgs	CheckoutFileCommandEventArgs	FileArray	Item	PkgBOM	SiteCompat
AddFileCommandEventArg	CodeWord	FileAssoc	ItemAssoc	PkgItem	SrchCond
AddFolderCommandEventArg	CommitChangeOrderCommandEventArgs	FileAssocArray	ItemAssocParam	PkgItemsAndBOM	SrchSort
AddItemCommandEventArg	CommitItemCommandEventArgs	FileAssocLite	ItemAssocProp	PkgProp	SrchStatus
AssocPropDef	ComplexField	FileAssocParam	ItemAssocPropArray	PredefListField	StringArray
AssocPropDefInfo	CompProp	FileAssocParamArray	ItemAttmt	Preview	TransACE
AssocPropItem	CompressionHeader	FileAssocRestric	ItemBOM	Product	TripleSysNamePair
Atmt	CtnSrc	FileCat	ItemBOMAndDiff	ProductRestric	UnitOfMeasure
AtmtConflict	CtnSrcPropDef	FileDelRestric	ItemBOMAssoc	RemoteItemCommandEventArgs	UpdateChangeOrderLifeCycleStateCommandEventArgs
AutogenField	CustEnt	FileDelRestricArray	ItemBOMAssoc	PropCompFail	UpdateCustomEntityLifeCycleStateCommandEventArgs
Bhv	CustEntDef	FileDelRestricEx	ItemBOMOcc	PropInstr	UpdateFileLifeCycleStateCommandEventArgs
BhvCfg	DbOwn	FileDelStatus	ItemCat	PropInstrFail	UpdateItemLifeCycleStateCommandEventArgs
BhvDelRestric	DeleteChangeOrderCommandEventArgs	FileElement	ItemConflict	PropInstrFailure	User
BlkThres	DeleteFileCommandEventArg	FileElementProp	ItemDelStatus	PropInstrF	UserInfo
BOM	DeleteFolderCommandEventArg	FileElementPropDef	ItemFileAssoc	PropInstrCond	VaultLicenseException
BOMComp	DeleteItemCommandEventArg	FileElementSrchCl	ItemNum	PropInstInfo	VaultLicenseMismatchException
BOMCompareOccDiff	DelimField	FileElementSrchCond	ItemRollbackLifeCycleStateCommandEventArgs	PropInivFail	VaultServiceCommunicationException
BOMCompAttr	DocRestric	FileFolder	ItemsAndFiles	PropInst	VaultServiceErrorException
BOMCompRefDesig	DocRestricArray	FileLfCyc	Job	PropInstParam	VaultServiceErrorException.Restriction
BOMInst	DownloadFileCommandEventArg	FileNameAndURL	JobParam	PropInstParamArray	VaultServiceException
BOMProp	EditChangeOrderCommandEventArgs	FileNmngDescr	KnowledgeLibraryHeader	PropRestric	WebServiceCommandEventArgs
BOMRefDesig	EditItemCommandEventArg	FileNmngSchm	KnowledgeVault	PropWriteReq	WebServiceCommandEvents<T>
BOMRefDesigAttr	Email	FilePath	Label	PropWriteResult	WebServiceInvokeEventArgs
BOMSchm	Ent	FilePathArray	LfCycDef	PropWriteResults	Wkgrp
BOMSchmOccur	EntACL	FileRenameRestric	LfCycState	Resolution	WkgrpLabelField
ByteArray	EntCat	FileRenameRestricArray	LfCycTrans	RevDef	Wmark
Cat	EntClassAssoc	FileRev	Lnk	RevDefInfo	Workflow
CatCfg	EntClassBehAssoc	FileRollbackStatus	LongArray	RevLabel	WorkflowInfo
CatRuleSet	EntClassCfg	FileTransferHeader	Map	RevSeq	WorkflowState
CatRuleSetCfg	EntClassCtnSrcPropCfg	FixedTxtField	MapPair	Role	XferStatus
ChangeOrder	EntClassPropCfg	Folder	MoveFileCommandEventArgs	Routing	
ChangeOrderEntAssoc	EntLfCyc	FolderArray	MoveFolderCommandEventArgs	RoutingMemb	
ChangeOrderFile	EntOwn	FolderCat	Msg	RoutingMembAndRoles	
ChangeOrderGrp	EntsAndACLS	FolderDelRestric	MsgGroup	RoutingRoleDef	

230

# Quiz

- How many Enumerations are available in the Vault API?  
(Limited to Autodesk.Connectivity.WebServices assembly)

- 10 – 100
- 100 – 200
- 200 – 300



# Quiz

- How many Enumerations are available in the Vault API?

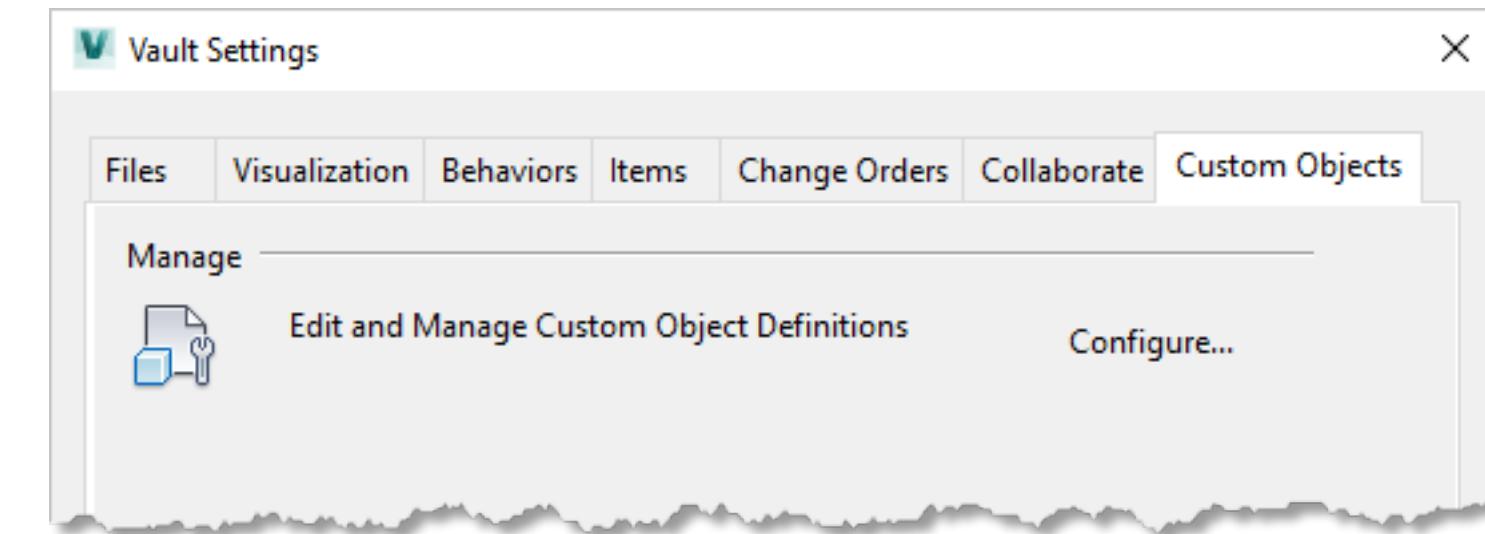
83

AllowedMappingDirection	CSPDefTypes	IndexingStatus	PropertyTypeEnum
AllowNoBehavior	DatabaseType	ItemAssignAll	PropRestricCode
AssociationType	DataType	ItemAssignBhv	PropWriteStatus
AssocPropTyp	DesignVisualizationAttachmentStatus	ItemAssignRestric	ProvStatus
AuthTyp	DocRestricCode	ItemAutogroupBhv	PrpgType
BehaviorAssignmentType	EnablementConfig	ItemBOMFileAssocTyp	ReplicationState
BOMEditAction	EnforceChildStateEnum	ItemConflictTyp	ResolutionMethod
BOMStructureEnum	EnforceContentStateEnum	ItemFileLnkTyp	RestrictionStatus
BOMStructureOverrideEnum	EntPersistOpt	ItemFileLnkTypOpt	RestrictLifecycleChange
BOMTyp	EventStatus	ItemHistoryTyp	RestrictPurgeOption
BOMViewEditOptions	FieldType	ItemSubComponentLinkType	SchemeTypeEnum
BreakDesignVisualizationLinkCommandList	FileAssocAlg	ItemToFileSecurityModeEnum	SearchOperator
BumpRevisionEnum	FileAssociationTypeEnum	JobStatus	SearchRule
ChangeOrderMarkupFolderConfig	FileClassification	JobSyncPropEnum	SearchRuleType
ChangeType	FileElementDataType	MappingDirection	SysAclBeh
CheckoutFileOptions	FileFormat	MappingType	VaultServiceCommunicationException.ReasonEnum
Classification	FileHistoryTypeOptions	NumSchmType	WmarkLoc
CompatStatus	FileLinkTypeEnum	ProductRestricCode	WmarkSize
ComponentTypeEnum	FileStatus	PropConstrTyp	WmarkType
Compression	FilterType	PropEquivFailTyp	XRefTypeEnum
CondOpers	FolderFileSecurityModeEnum	PropertySearchType	

# Quiz

- How many Custom Objects are available in Vault?

- 0 - 100
- 100 - 500
- 500 - 1000



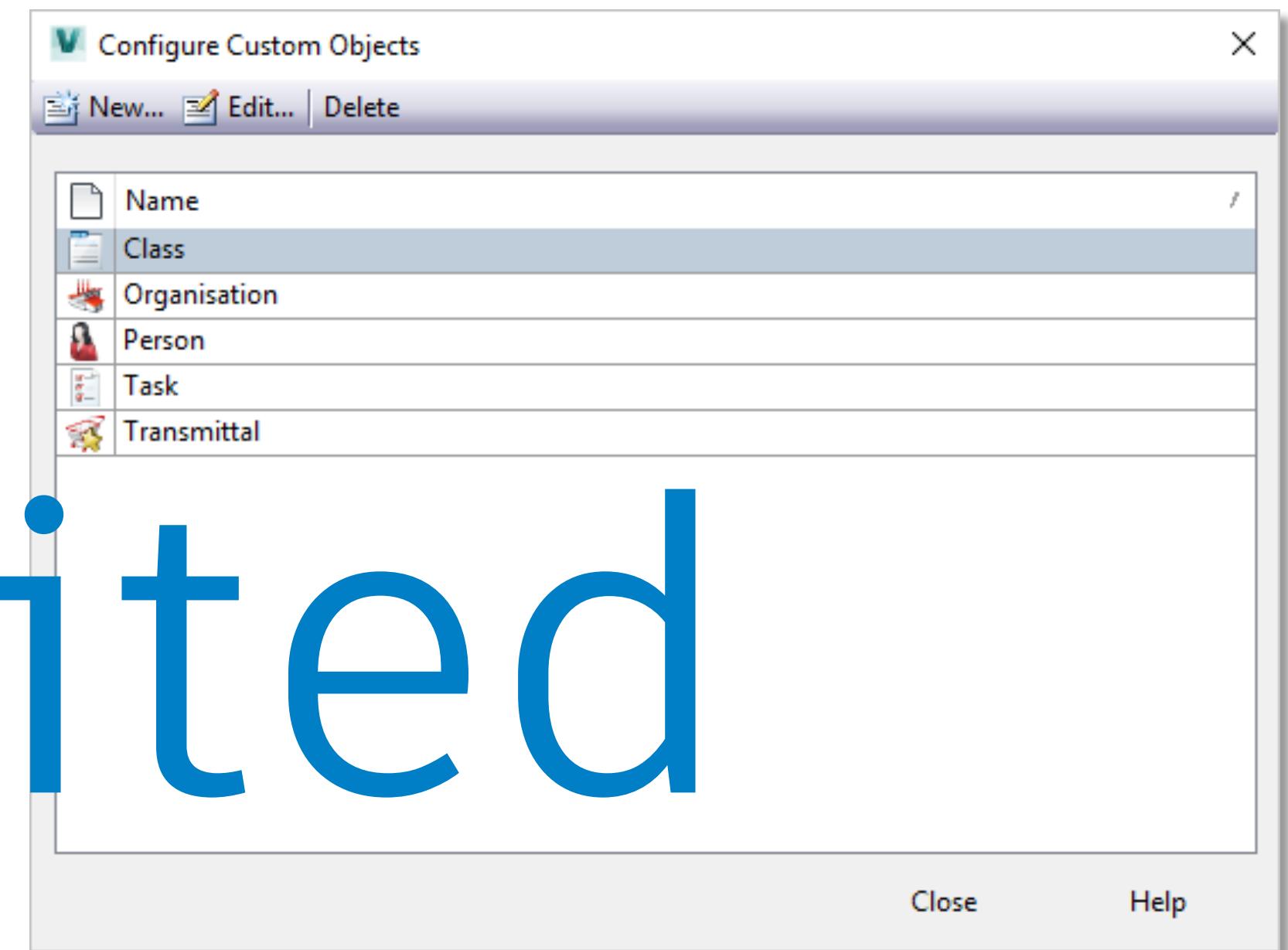
# Quiz

- How many Custom Objects are available in Vault?

Class recommendation:

[MFG120638 - What the Heck Is  
Custom Object](#)

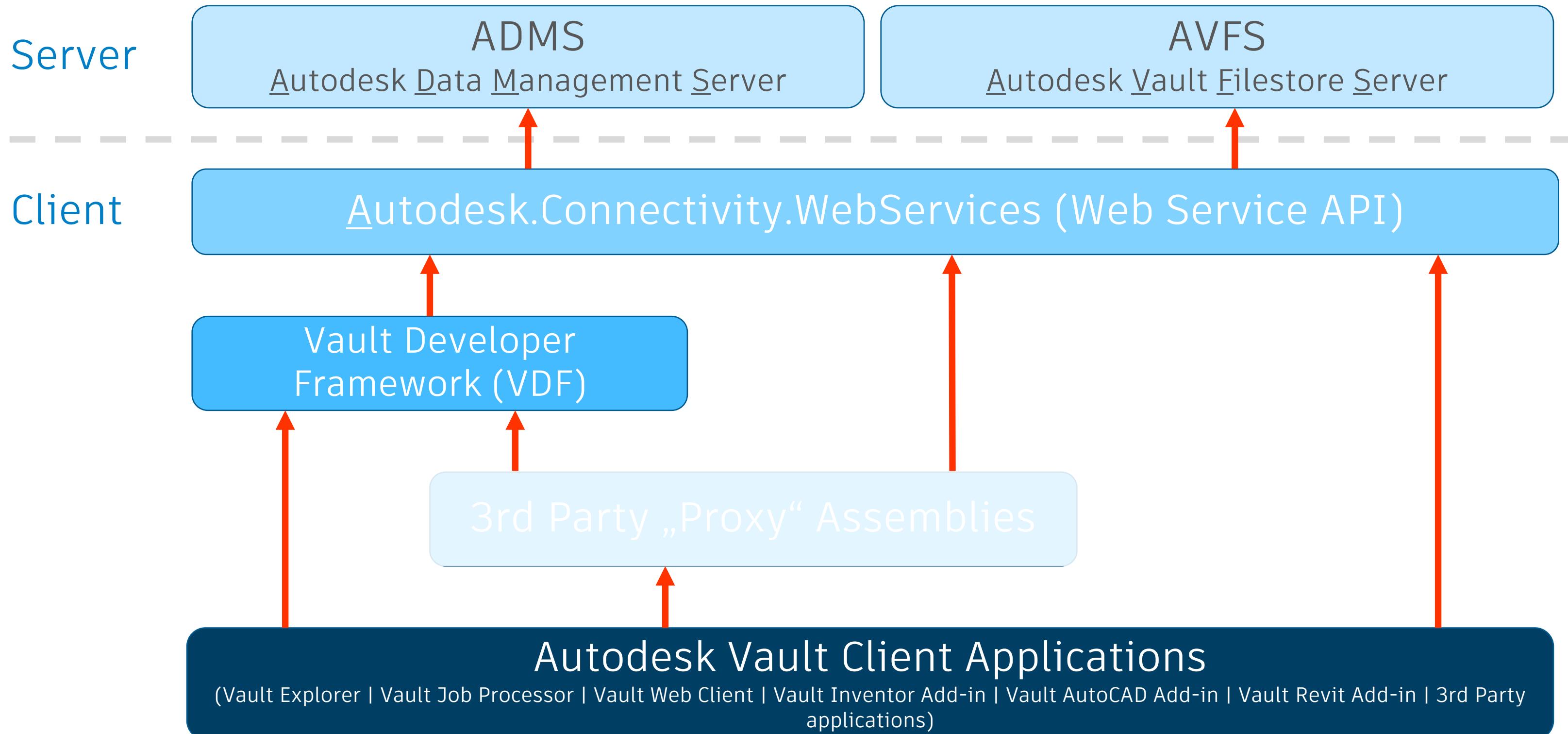
unlimited



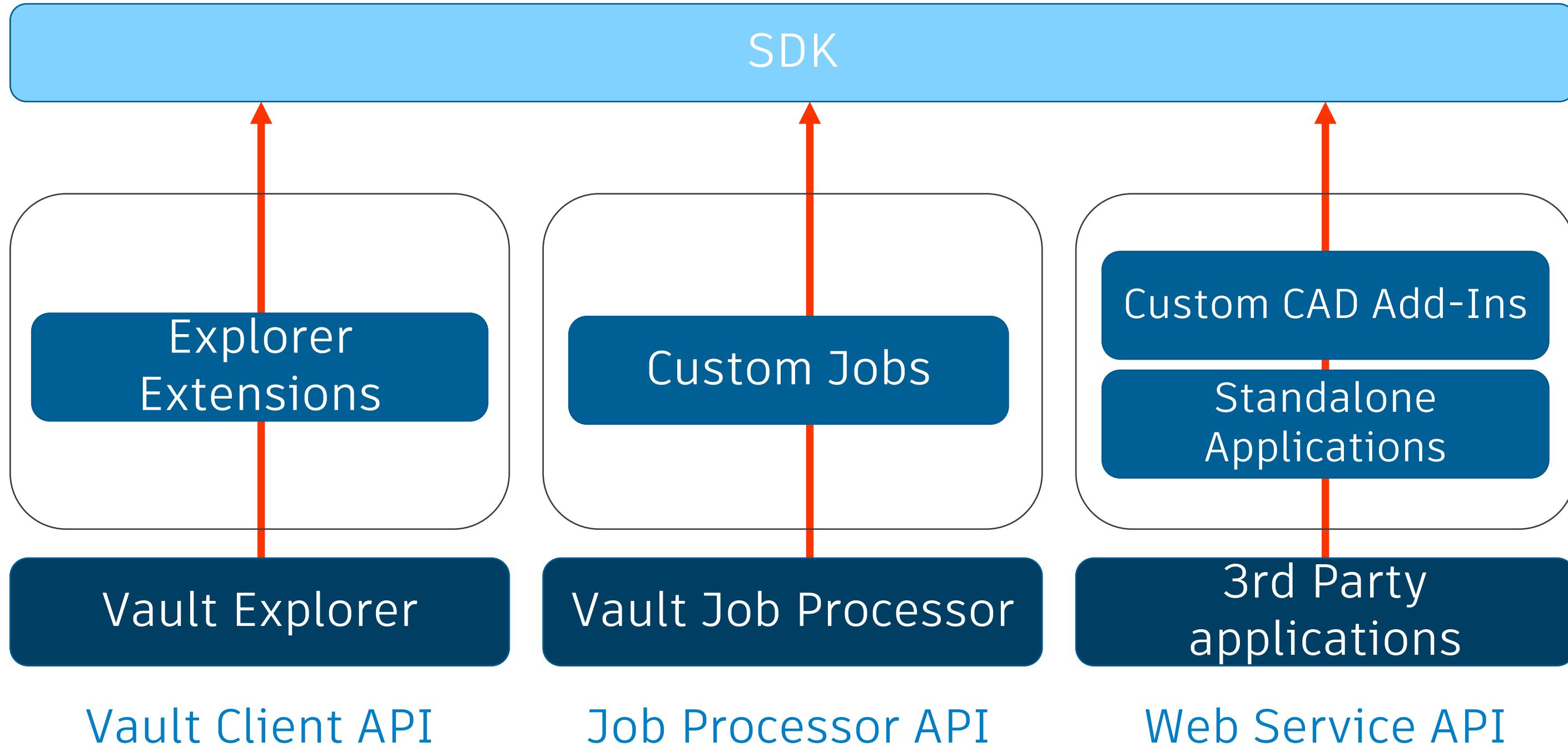
The background features a complex, abstract geometric pattern composed of numerous thin, light gray lines forming a wireframe mesh. This mesh is organized into several large, overlapping spherical structures that appear to be in motion, creating a sense of depth and perspective. The overall effect is reminiscent of a microscopic view of organic or crystal-like forms.

Understand the Details

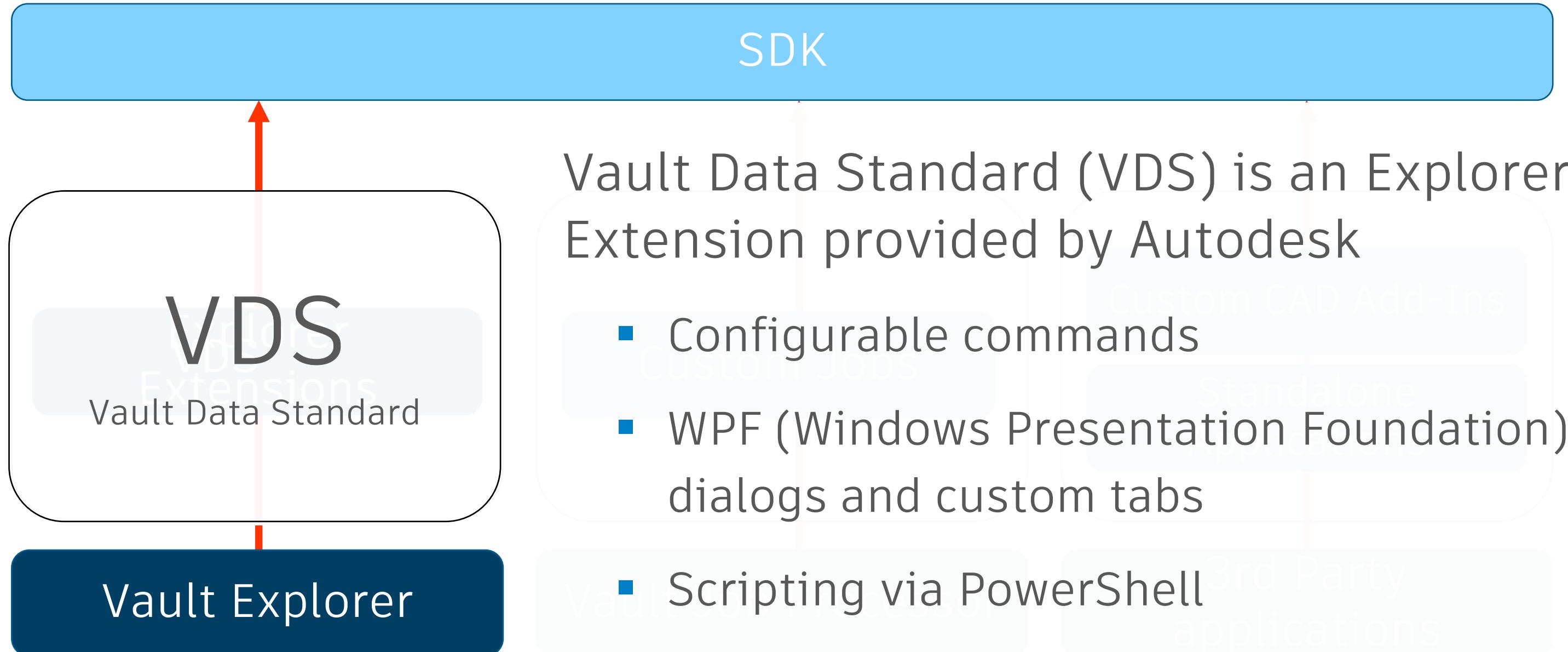
# Architecture



# Extensibility



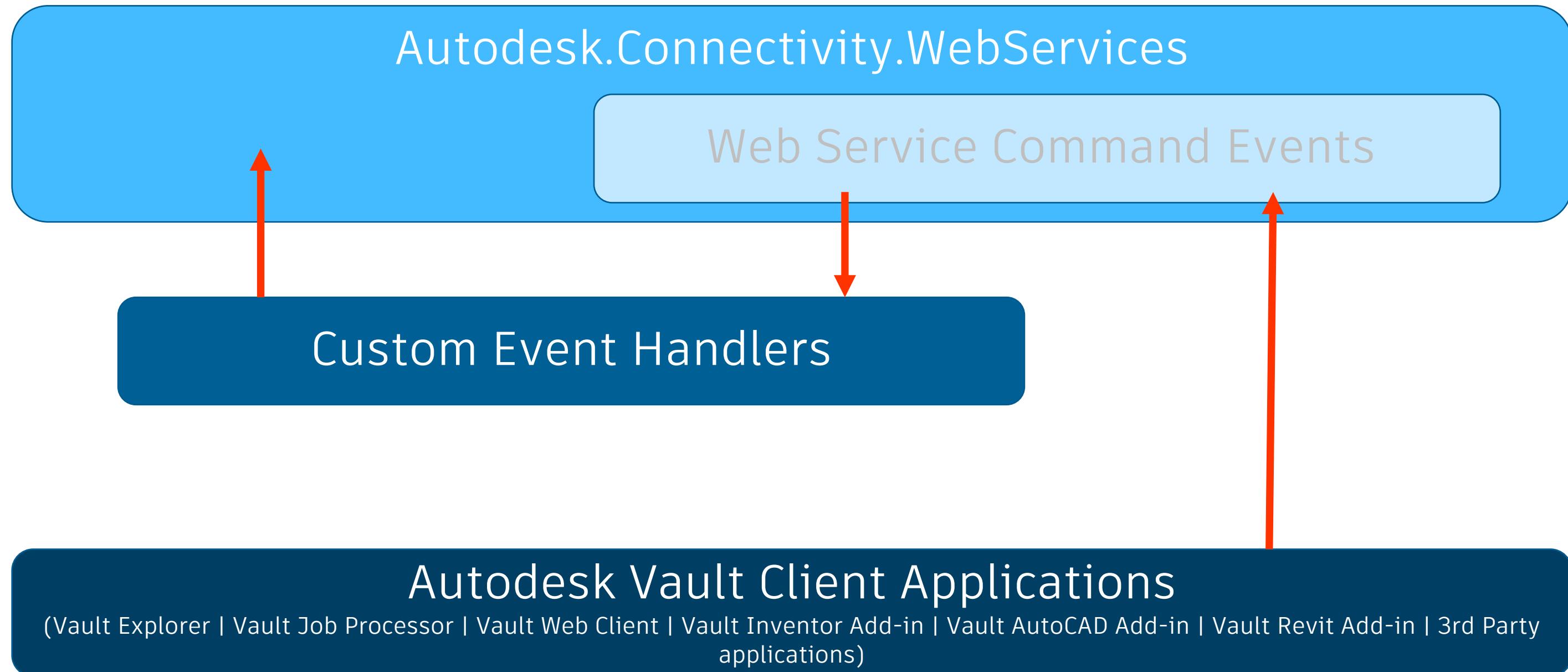
# Extensibility (Data Standard)



Class recommendation:

[SD124422 - Vault Extensions Snorkeling – First Touch to Vault Extension and Automation Programming](#)

# Event Handling



# Extension Basics

# Interfaces

- Vault Explorer Extensions ← IExplorerExtension
- Event Handlers ← IWebServiceExtension
- Custom Jobs ← IJobHandler
- A file with extension vcet.config specifies interface, class and assembly

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <connectivity.ExtensionSettings3>
    <extension
      interface="Autodesk.Connectivity.Explorer.Extensibility.IExplorerExtension, Autodesk.Connectivity.Explorer.Extensibility, Version=1.0.0.0, Culture=neutral, PublicKeyToken=1234567890123456"
      type="MFG124959.LinkProperties.ExplorerExtension.ExplorerExtension, MFG124959.LinkProperties.ExplorerExtension">
    </extension>
  </connectivity.ExtensionSettings3>
</configuration>
```

- “*extension interface*” specifies the Interface
- “*extension type*” specifies the class and the assembly name that implements this interface

# Attributes

- Assembly attributes

- *AssemblyCompany*,
- *AssemblyProduct* and
- *AssemblyDescription* must not be empty

```
[assembly: AssemblyTitle("MFG124959.LinkProperties.ExplorerExtension")]
[assembly: AssemblyDescription("AU 2017 Example Vault Explorer Extension")]
[assembly: AssemblyConfiguration("")]
[assembly: AssemblyCompany("coolOrange S.r.l.")]
[assembly: AssemblyProduct("MFG124959.LinkProperties.ExplorerExtension")]
[assembly: AssemblyCopyright("Copyright © coolOrange S.r.l. 2017")]
[assembly: AssemblyTrademark("")]
[assembly: AssemblyCulture("")]
```

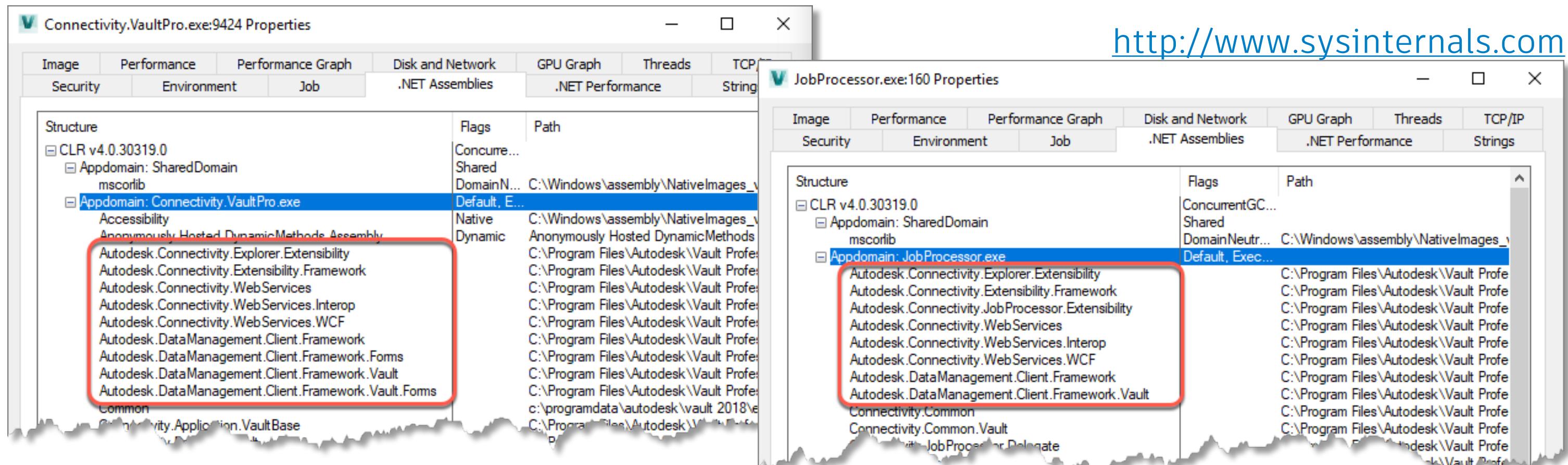
- Framework attributes  
(Autodesk.Connectivity.Extensibility.Framework)

- *ExtensionId* must contain a unique GUID that identifies the extension
- *ApiVersion* must contain internal version of Vault (11.0 for Vault 2018)

```
[assembly: Autodesk.Connectivity.Extensibility.Framework.ExtensionId("7ADC0766-F085-46d7-A2EB-C68F79CBF4E1")]
[assembly: Autodesk.Connectivity.Extensibility.Framework.ApiVersion("11.0")]
```

# Deployment

- Location: `C:\ProgramData\Autodesk\Vault 2018\Extensions\YourExtension`
- Configuration file (`vcet.config`)
- Extension assembly and all files referenced by the extension
- Exception: DLLs loaded by the host application don't have to be deployed



# Error handling

- Extension loading error logging can be activated
- *C:\ProgramData\Autodesk\Vault 2018\Extensions\ExtensionLogConfig.xml*

```
<?xml version="1.0"?>

  <BaseFileName>C:\ProgramData\Autodesk\Vault 2018\Extensions\ExtensionLog_</BaseFileName>
  <DateFormat>_yyyyMMdd</DateFormat>
  <KeepLogsFor>1</KeepLogsFor>
  <FileExtension>.txt</FileExtension>
</ExtensionLoggerConfiguration>
```

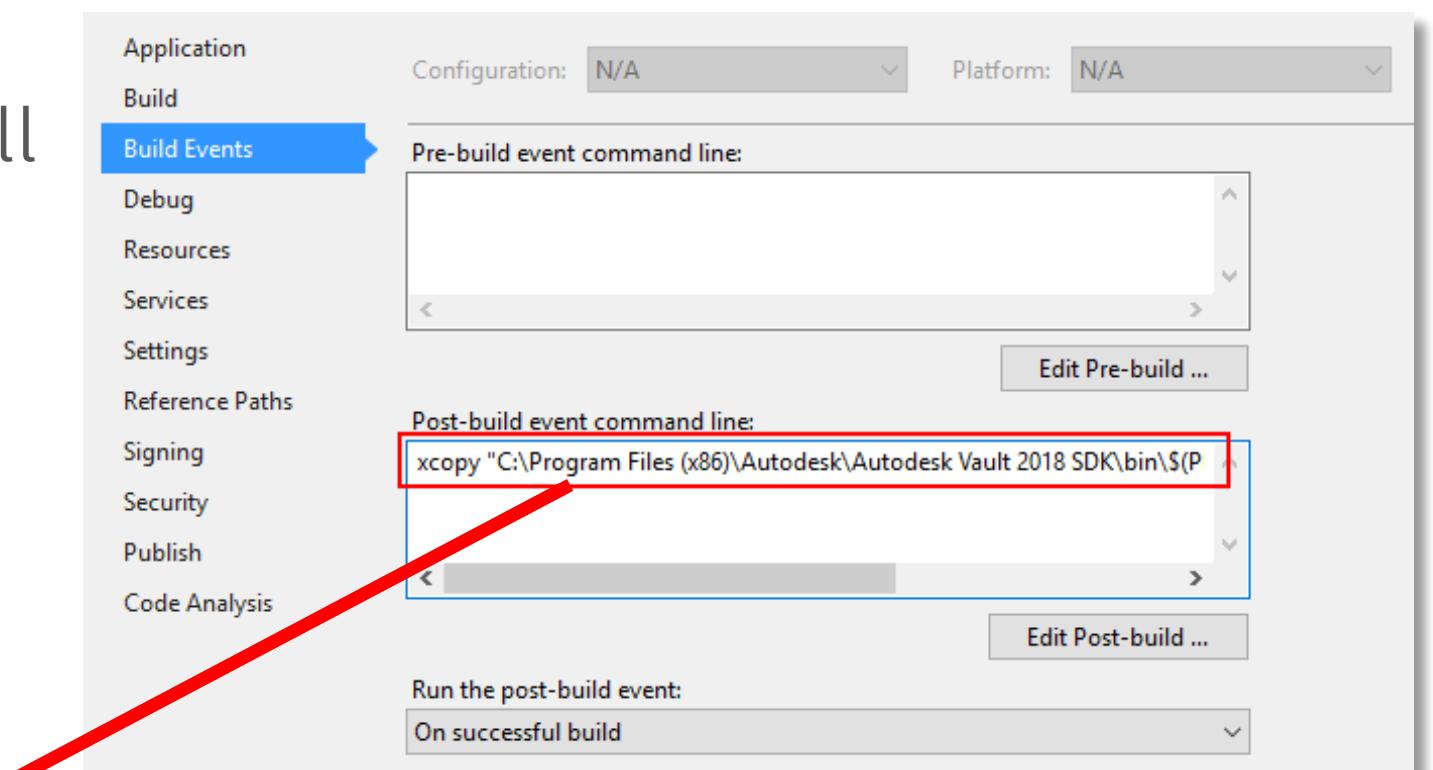
- File name, location, date format, lifespan and file extension is configurable

<http://justonesandzeros.typepad.com/blog/2012/07/extension-loading-error-logging.html>

# Standalone Application Basics

# Deployment

- All standalone applications communicating with Vault must deploy:
  - clmloader.dll
  - Autodesk.Connectivity.WebServices.dll
  - Autodesk.Connectivity.WebServices.Interop.dll
  - Autodesk.Connectivity.WebServices.WCF.dll
- clmloader.dll is not a managed dll and can be deployed using xcopy as a post-build event command:



```
xcopy "C:\Program Files (x86)\Autodesk\Autodesk Vault 2018 SDK\bin\$(PlatformName)\clmloader.dll" "$(TargetDir)" /y
```

# Licensing

# Licensing (CLiC Framework)

- Client-side licensing
- Embedded in the SDK

- Components

- clmloader.dll and
- Autodesk.Connectivity.WebServices.Interop.dll

- Configurable via App.config

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>

    <configSections>
        <section name="Licensing" type="Autodesk.Connectivity.WebServices.LicensingSection, Autodesk.Connectivity.WebServices"/>
    </configSections>

    <Licensing edition="Professional"/>

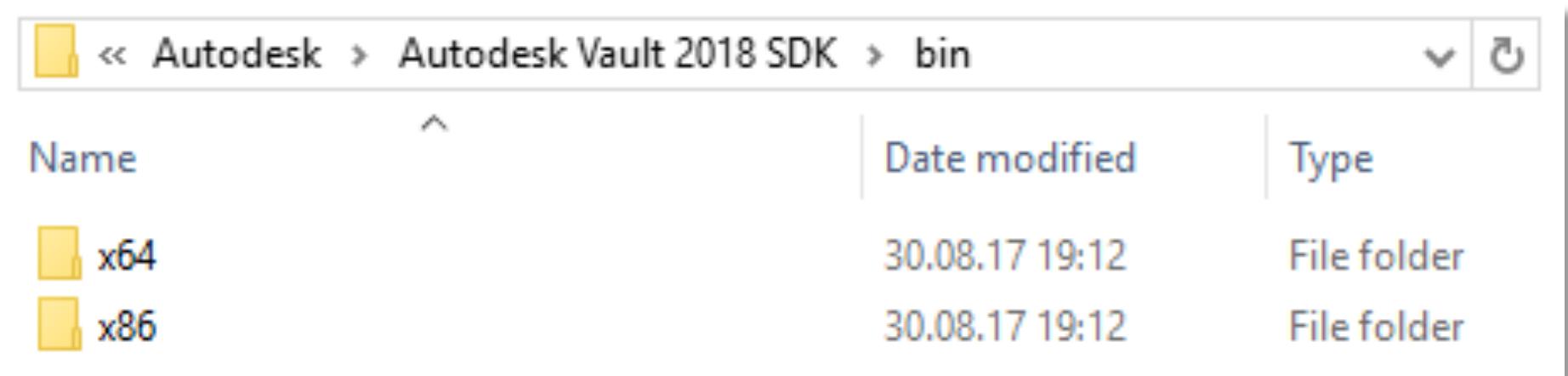
</configuration>
```

SDK

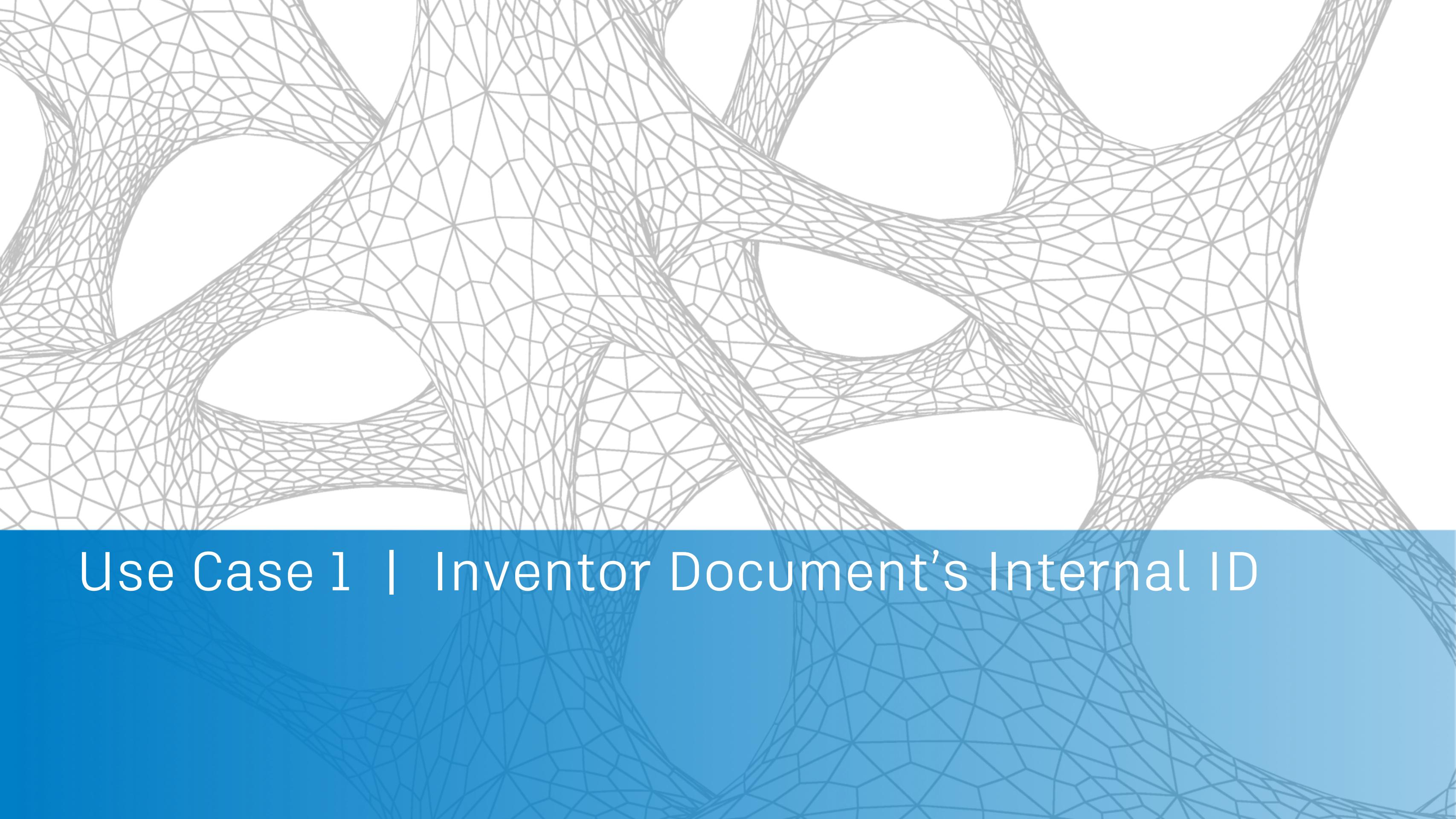
CLiC Framework

# Bitness (32-bit vs. 64-bit)

- SDK includes x64 and x86 versions of all DLLs
  - Depending on the Vault platform
  - Only Vault office client available in x86
  - Workgroup & Professional extensions and Inventor Add-Ins have to be created in x64
  - Standalone applications and AutoCAD Add-Ins can be either x64 or x86



Name	Date modified	Type
x64	30.08.17 19:12	File folder
x86	30.08.17 19:12	File folder

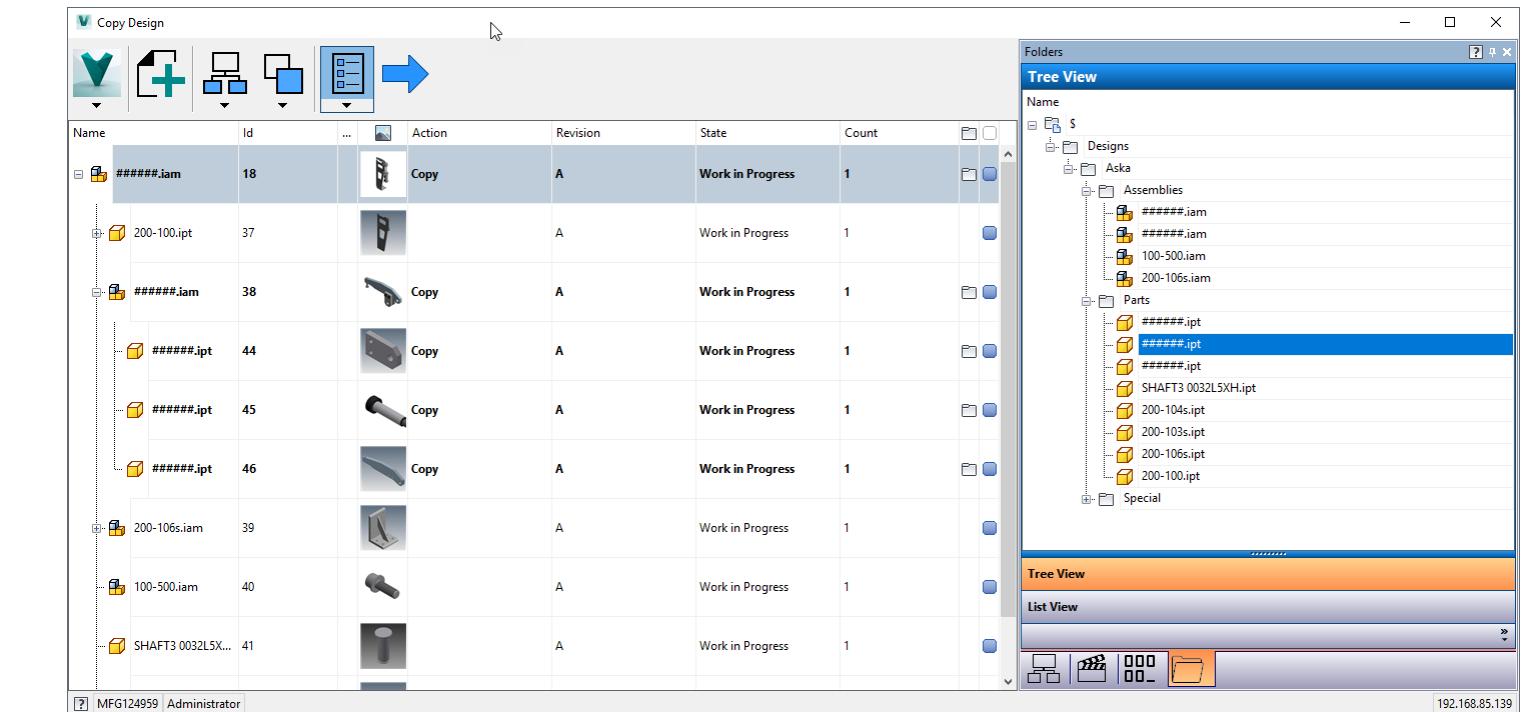


# Use Case 1 | Inventor Document's Internal ID

# Use Case 1 | Description

## Issue:

- CopyDesign is powerful – but I'm wondering how to track the relationship, e.g. finding all siblings copied from the same source



## Solution:

- Inventor files have an *Internal ID*, that never changes...
- This use case is all about to get the internal ID of an Inventor document

# Use Case 1 | Custom Job Example

- Create a Custom Job
- Debug a Custom Job
- *Interesting: Trace Vault using Fiddler*
- Find entities in Vault (Paging)
- *Interesting: Conditional breakpoints in Visual Studio*
- File download using the Vault API

F



Visual Studio

# Use Case 1 | Standalone Application Example

- Assembly deployment
- Create and debug a standalone application
- License consumption
- Login to Vault using the Vault API
- *Interesting: Utilizing the Windows Task scheduler*



Visual Studio

# Demo

# Use Case 1 | Custom Event Handler Example

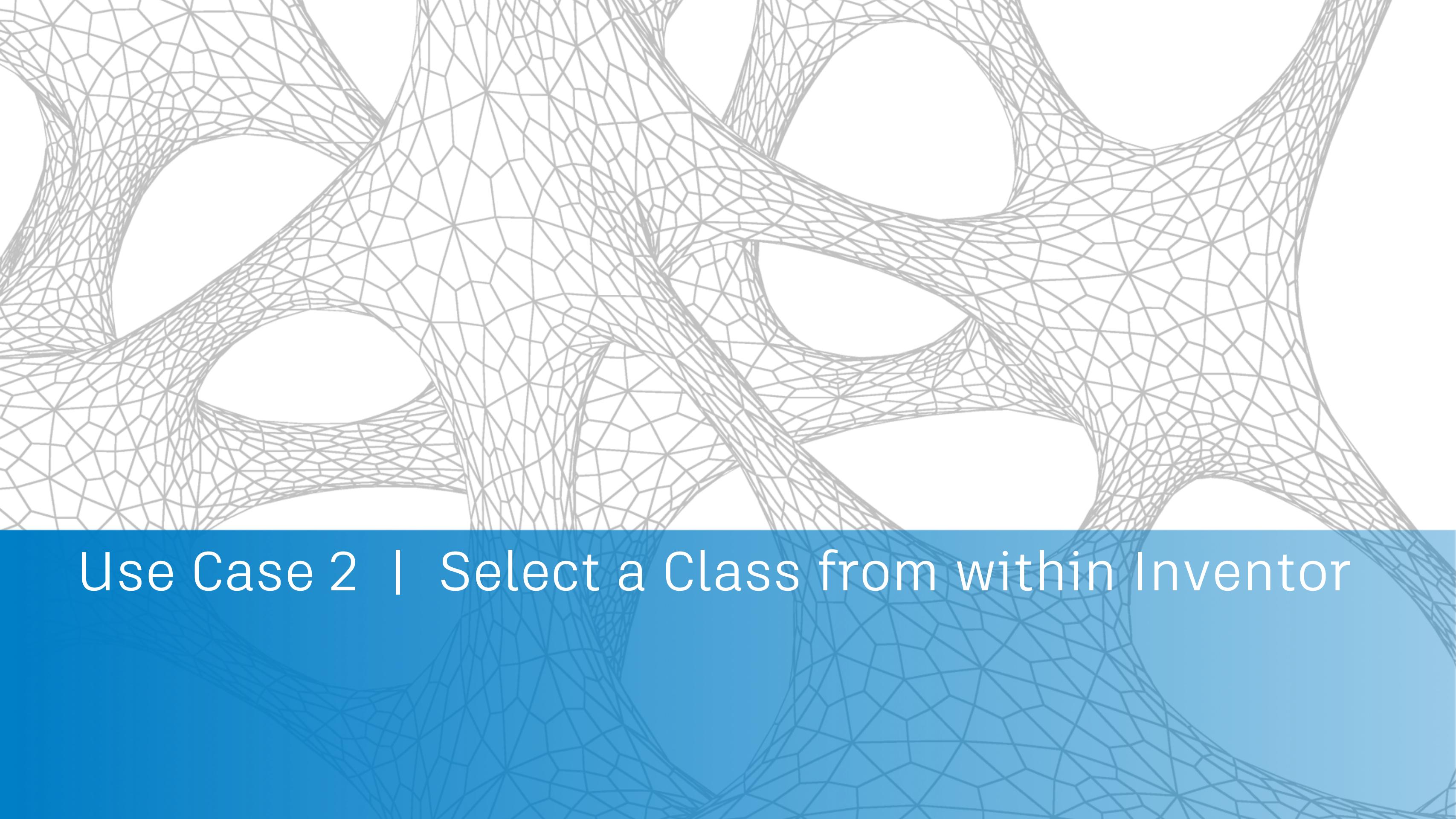
- Create a Custom Event Handler
- Debug a Custom Event Handler
- Detect the calling application
- Create a VDF connection
- File download using the VDF



Visual Studio

# Use Case 1 | Summary

- **Create & Debug Custom Job**
  - Find entities in Vault
  - File download using Vault API
- **Create & Debug Standalone App**
  - Assembly deployment
  - License consumption
  - Login using Vault API
- **Create & Debug Custom Event Handler**
  - Detect calling Application
  - Create VDF connection
  - File download using the VDF



Use Case 2 | Select a Class from within Inventor

# Use Case 2 | Description

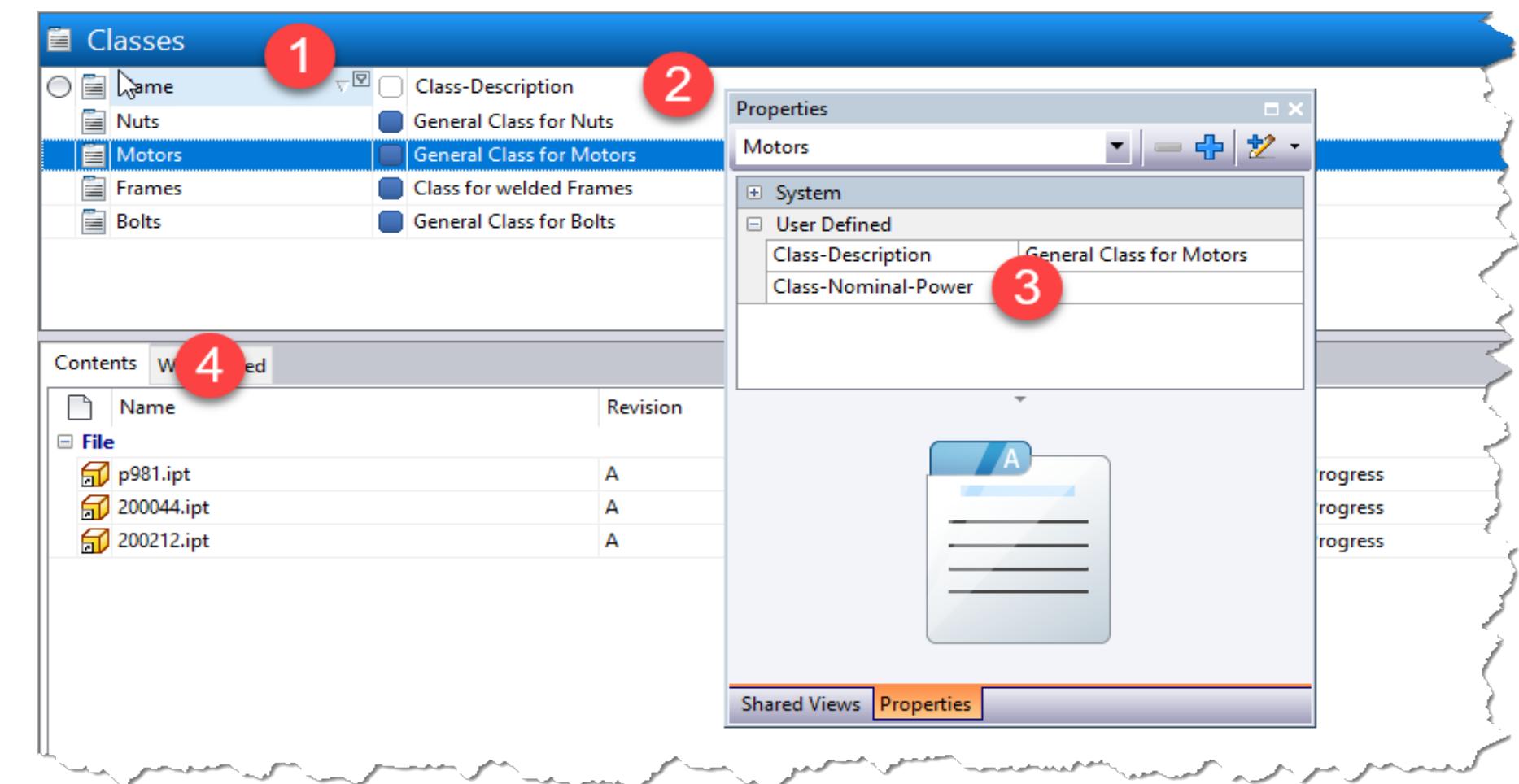
Demo

- We implemented “Classes” to classify/group similar components
- To assign a class, we copy files/items to the class’ content tab

**Issue:** I'd like to do simplify...

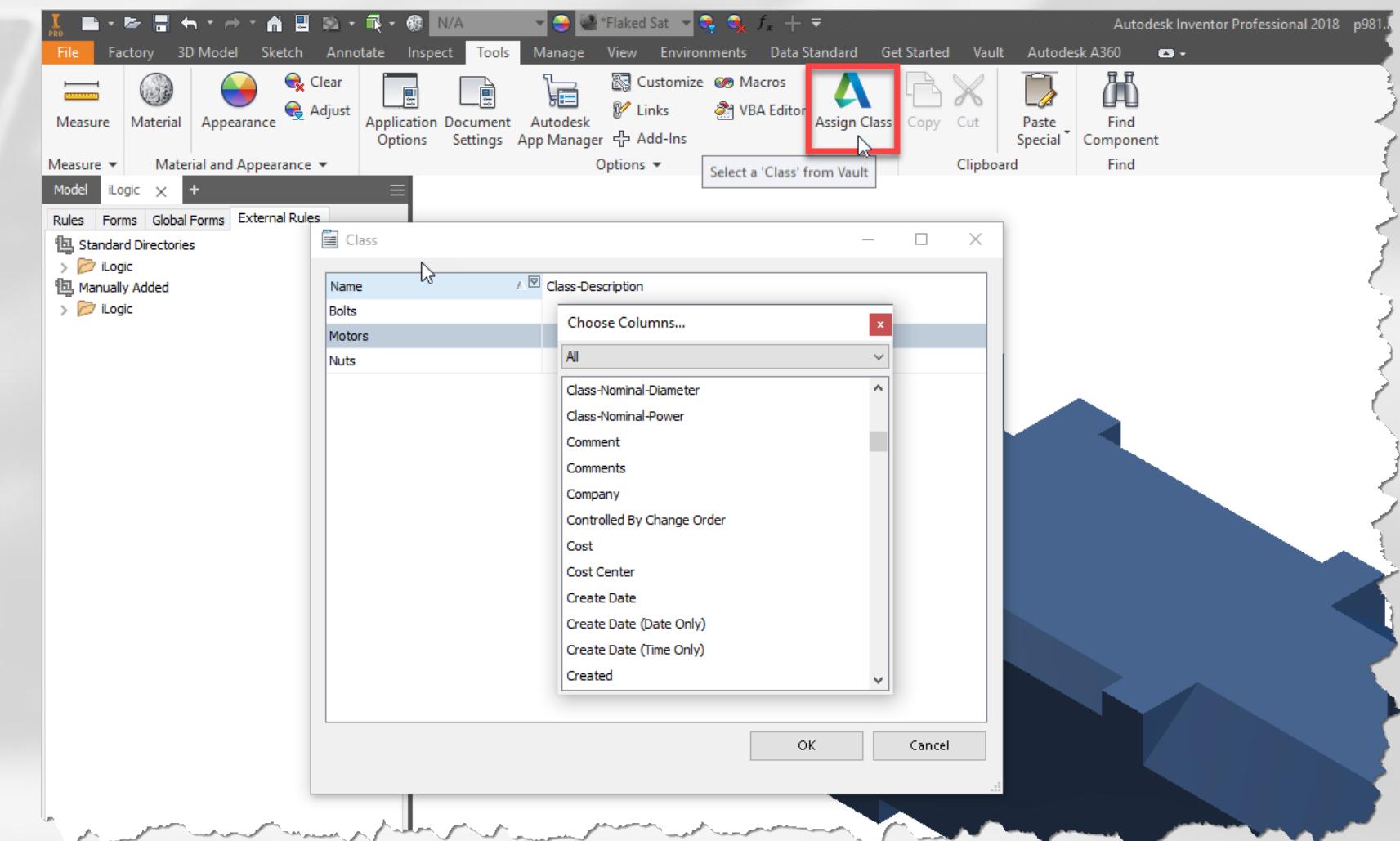
- Classify within Inventor
- Grab the class' properties

**Solution:** ?



# Use Case 2 | Inventor Add-In Example

- Reuse Vault connection from Inventor's Vault Add-In (EDMAddin)
- Use Late binding to create one Inventor Add-In for multiple Vault versions
- Create an Entity picker dialog that shows a VDF grid with Custom Objects within Inventor



# Use Case 2 | Custom Event Handler Example

- Create a link between a file and a class

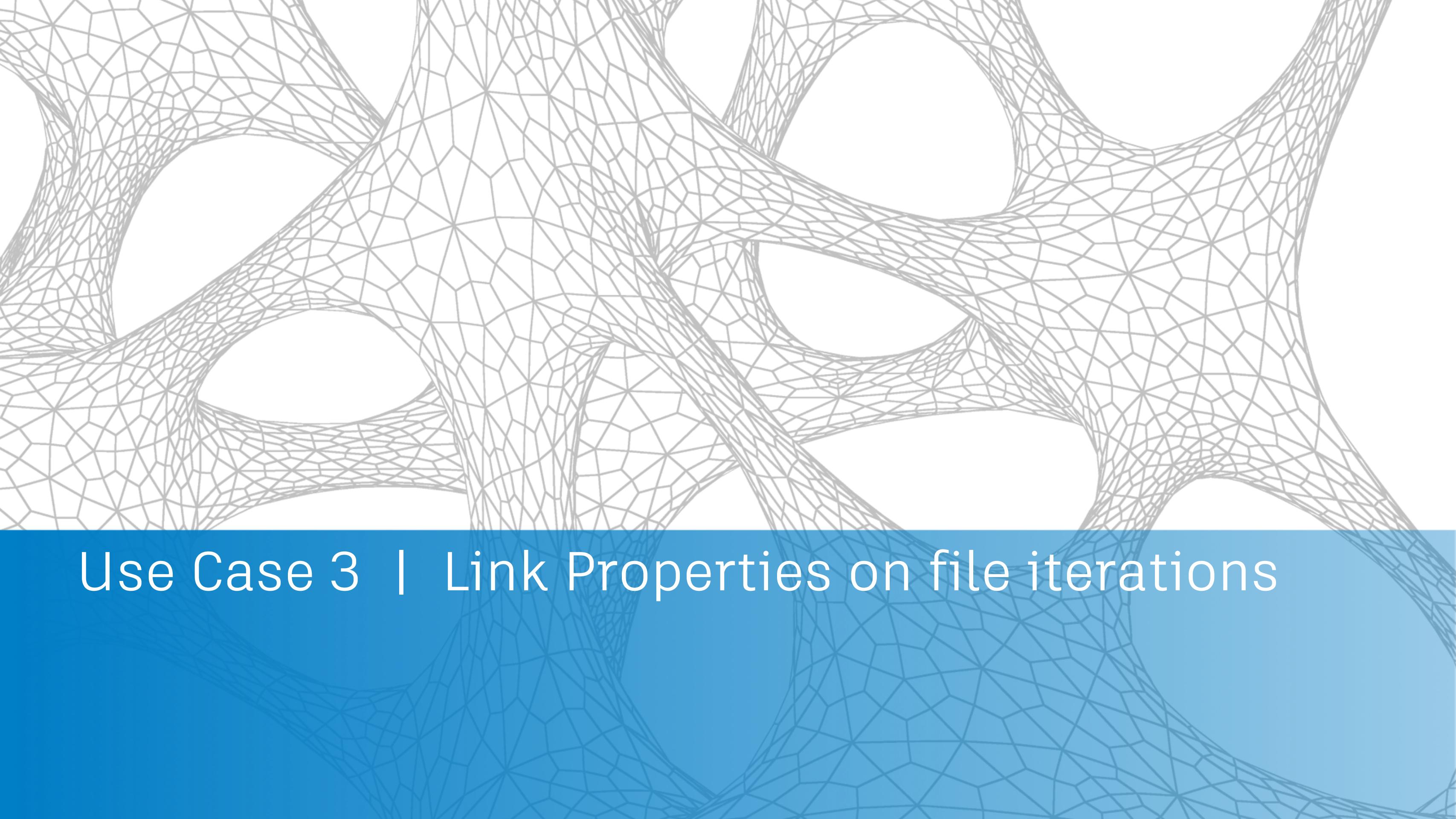


Visual Studio

# Demo

# Use Case 2 | Summary

- **Create & Debug Inventor Add-In**
  - Reuse Vault connection from Inventor's Vault Add-In
  - Create interface to access Vault functions for multiple Vault versions
  - Use late binding to load specific DLL versions
  - Create Entity picker dialog using VDF grids for Custom Objects
- **Extend existing Custom Event Handler**
  - Create link between file and custom object

The background features a complex, abstract geometric pattern composed of numerous thin, light-grey lines forming a wireframe mesh. This mesh is organized into several large, rounded, bulbous shapes that overlap each other, creating a sense of depth and organic form. The overall effect is reminiscent of a molecular structure or a microscopic view of a complex material.

## Use Case 3 | Link Properties on file iterations

# Use Case 3 | Differentiate Links / Revision

- Scenario:
  - Customer A got machine, revision A per order 2015-067 in 2015
  - Customer A again ordered same machine in 2017 per order 2017-301
- Challenge
  - I'd like to link the dedicated Revision to reflect that the customer runs 2 different revisions of our machine



History	Uses	Where Used	Change Order	Preview	CAD BOM	Datasheet	Fusion L
Number of versions:				7	(Local = Version #7)		
Number of revisions:				2			
Thumbnail	File Name	Revision	State (Historical)				
	Ember-LD-ASM.iam	B	Released				Order 2017-301
	Ember-LD-ASM.iam	A	Released				Order 2015-067

# Use Case 3 | Challenge

- Challenge
- Goal / Solution

The image displays two side-by-side screenshots of a software application interface, likely for managing organizational data and file histories.

**Screenshot 1 (Left): Organization Management**

This screenshot shows a list of organizations. The top section lists "coolOrange" and "Autodesk". Below this is a table with columns: Name, Revision, State, and Created By. Under "File", there are two entries: "Ember-LD-ASM.iam" (Revision B, Released, Administrator). Under "Person", there is one entry: "Markus Koechl" (Administrator).

Name	Revision	State	Created By
Ember-LD-ASM.iam	B	Released	Administrator
Ember-LD-ASM.iam	B	Released	Administrator

**Screenshot 2 (Right): File History**

This screenshot shows a list of files. The top section lists "coolOrange" and "Autodesk". Below this is a table with columns: Name, Revision, Version, State (Historical), and Order Number. There are two entries for "Ember-LD-ASM.iam": one with Revision B, Version 7, State Released, and Order Number 12345678; and another with Revision A, Version 3, State Released, and Order Number CAD-123465.

Name	Revision	Version	State (Historical)	Order Number
Ember-LD-ASM.iam	B	7	Released	12345678
Ember-LD-ASM.iam	A	3	Released	CAD-123465

# Use Case 3 | Custom Event Handler Example

- Create a Vault Explorer Extension
- Debug a Vault Explorer Extension
- Add custom command to link file to Custom Object “Organization”
- Create “Link Properties” ([NEW IN VAULT 2017](#))
- Create a custom tab in the context of a Custom Object
- Show VDF grid on a custom Vault Explorer tab
- Introduce custom column to the VDF grid that displays the “Link Property”

# Demo

# Use Case 3 | Summary

- **Create & Debug Vault Explorer Extension**
  - Add custom command to link files to Custom Objects
  - Create “Link Properties” ([NEW IN VAULT 2017](#))
  - Display a custom tab in the context of a Custom Object
  - Show VDF grid on a custom Vault Explorer tab
  - Add custom columns to VDF grid that displays additional information



Summary – “Best” Access Points | Additional Materials

# Summary – Best “Access Points” | Material

- Continue Diving
  - ⇒ Review and Rework This Class’ Material | Additional Materials
  - ⇒ Review AU Repository
  - ⇒ Vault Job Processor
  - ⇒ Vault VDF

# Summary – Best “Access Points” | Material

- Actual | Up-to-date
  - Autodesk Community API & VDS -> [Customization Forum](#)
  - Autodesk Manufacturing DevBlog <http://adndevblog.typepad.com/manufacturing/>
  - coolOrange Blog <https://blog.coolorange.com/>
- Legacy | Valid for ever...
  - Link Collection <http://justonesandzeros.typepad.com/blog/2013/08/various-articles-from-around-the-web.html>
  - Webcast-Training Archive <http://adndevblog.typepad.com/manufacturing/2013/05/api-webcast-archive.html>

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